DOCUMENT RESUME

ED 042 292 EC 006 109

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TITLE Application of the IPI Model to a Perceptual Development Curriculum.
INSTITUTION Pittsburgh Univ., Pa. Learning Research and Development Center.
PUB DATE [69]
NOTE 17p.

EDRS PRICE EDRS Price MF-$0.25 HC-$0.95
DESCRIPTORS *Curriculum, *Exceptional Child Education, Individualized Instruction, *Learning Disabilities, Perceptual Development, *Perceptual Motor Coordination, Psychomotor Skills

ABSTRACT

The Individually Prescribed Instruction (IPI) Model developed by Bolvin and Glaser (1968) is applied to a perceptual development curriculum for children manifesting learning disabilities. The Model utilizes criterion referenced tests for behavioral objectives in four areas: general motor, visual motor, auditory motor, and integrative. Eight units for general motor skills are appended in chart form. (JD)

APPLICATION OF THE IPI* MODEL TO A PERCEPTUAL DEVELOPMENT CURRICULUM

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An increasing number of school systems have become aware of the importance of appropriate perceptual development as a prerequisite for learning. As a result, many schools are now providing interventions for a specific number of their students. The intervention is remedial in design. Its purpose is to treat the children whose atypical perceptual skills seem to be impeding academic achievement.

Perception, in this context, refers to one's ability to extract concrete (non-abstract) information from the environment. It is the process that enables the child to reliably attach an organized structure to raw sensory data. This paper accepts the following premises:

1. Perceptual skills provide a foundation for higher order cognition.
2. They are acquired rather than innate functions dependent upon not only the integrity of the child's biological systems, but also the richness of his sensory-motor development as shaped by interactions with his environment.
3. The two most important perceptual systems in academic performance, the visual and auditory, depend upon tactile-kinesthetic support for the analysis and synthesis of concrete information.

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*Individually Prescribed Instruction. Developed at the Learning Research and Development Center, University of Pittsburgh.

4. *Tactile-kinesthetic support, initially overt and global, becomes more differentiated and implicit through growth and development. This, in turn, allows for more efficient analysis, ordering and reproduction of concrete information. The child learns to code the sensory stimuli in his environment. In time he recodes (regroups) these "bits" of information into larger units or "chunks," (Miller, 1956) so that "circles and lines" become specific letters and are no longer viewed in the more primitive manner. Hence, more complex information may be processed in less time.*

Certain problems are encountered in most, if not all, school directed perceptual programs. These are:

1. *Ineffective <u>early</u> identification of those children whose perceptual skills are less than satisfactory. Rather, in many situations the child must repeatedly manifest his inadequacies before testing is offered (Rosner, et al., 1969). This is particularly true if the child's behavior is not disruptive.*

2. *Few schools have provided sufficient means for a therapeutic program that serves the <u>individual</u> needs of each child. It is apparent that certain children display inadequacies in one perceptual system only (e.g., auditory or visual), while others are more generally affected. Some manifest extremely substandard gross motor skills while others do not. A program of intervention should contain elements designed to improve specific functions.*

3. There is a scarcity of classroom management systems that enable the teacher to provide the indicated intervention, to be aware of specific gains, to modify programs that exploit these gains and to maintain individual control of each student's progression through the program.

As a result of these obstacles, many well-intentioned, motivated teachers have instituted programs only to find that the demands are excessive. It is not wise to use a clinical model that casts the teacher as a professional within a discipline other than his/her own. To compound that by burdening her with too great a case load serves only to hasten the onset of discouragement. Abandonment of the program or, at best, drastic reduction of its capacity to effect the desired changes often follows.

At the Learning Research and Development Center of the University of Pittsburgh, academic instructional programs that recognize the uniqueness of each child's experiential background and existing level of competency have been developed. Individually Prescribed Instruction (IPI) (Bolvin and Glaser, 1968) and the Primary Education Project (PEP) (Resnick, 1967) are two examples of such development efforts. Both are based upon a careful analysis of the components involved in mastering specific educational goals. These components are described behaviorally and sequenced in a hierarchy. The teacher is provided with placement and pre-tests to assess the entering competencies of each child. Curriculum-embedded tests and post-tests monitor the child's progress as he achieves mastery of the designated behavioral objectives. All tests are criterion rather than norm-referenced. Hence they may be taught towards and allow for the prescribing of specific instructional strategies. Norm-referenced tests allow for

comparison with a representative equivalent population. Achievement tests and I.Q. tests are examples of norm-referenced instruments. Criterion-referenced tests are those that probe the presence of a specific behavior. The assumption is that successful performance on a criterion-referenced test indicates the acquisition of a generalizable skill. Teaching a child the answers to a norm-referenced test merely invalidates the score. On the other hand, teaching the appropriate response to a criterion-referenced test is not only valid but the treatment of preference. Motor skills tests, such as hopping or skipping, are examples of criterion-referenced instruments. In addition, the use of such tests facilitate precise tracking of the individual student.

This model of individualization has been applied to the teaching of perceptual skills within the context of IPI and PEP. In its present state, the perceptual skills curriculum is developmental rather than remedial. It is designed to insure, insofar as possible, that each child acquires facility in processing concrete information before he is exposed to the abstractions of an academic program. In accord with the IPI model, we attempted to identify and analyze the various perceptual skills considered to be directly related to academic performance at the kindergarten and primary level (Rosner, 1969). Successful classroom performance at that level appears to be dependent upon the child's capacity to perform certain specific tasks. He must be able to decode visual information and demonstrate his comprehension of its construction by an encoding pencil and paper response. He also must decode auditory information and demonstrate his comprehension of its construction by an encoding response employing his own vocal mechanism. Ultimately, he must demonstrate efficient

intersensory integrative skills, such as representing visual information in verbal form and auditory information in visual (graphic) form. A child lacking these skills will find academic achievement difficult indeed. In addition, he should be prepared to perform these processes without excessive conscious effort, that they may serve as efficient subskills to higher order cognitive functions. The child whose printing and/or speech articulation skills reveal immature, global characteristics, the child who persists in confusing the "b" and the "d", who consistently "loses his place" on the page, who is incapable of basic auditory discriminations, who cannot attend to and remember a short sequence of simple spoken instruction, will have little time and energy to devote to such tasks as concept formation. Perhaps he "can do better if he tries," but at what price -- and, for how long?

Following the task analysis, we described those perceptual processing skills in behavioral terms. Each stated behavior was designated as an objective within the curriculum. These were grouped into four major areas and sequentially ordered within each area. The resultant hierarchy of behavioral objectives reflects the previously stated rationale. That is, there is a diminishing dependency upon overt motor support in the manipulation of sensory information.

The four major curriculum areas are: General-motor, Visual-motor, Auditory-motor and Integrative. A criterion-referenced test was written for each behavioral objective. The teacher, then, may determine each child's degree of competency within each curriculum area by testing for the presence of specific behaviors (Wang, 1969). Testing the terminal objectives within each grouping serves as a placement device. If the

hierarchy of objectives is valid, and if the child can demonstrate mastery of the most complex and demanding objective within that hierarchy, he has, by inference, achieved mastery of all the supporting behaviors. On the other hand, if he cannot demonstrate mastery of the terminal behavior, the teacher is provided with pre-tests to sample skills at predetermined lower levels of the hierarchy. The child can then be placed into the curriculum at his level of competency rather than above (which would serve to frustrate) or below that point (which would offer little challenge and might extinguish motivation). As the child learns and moves through the sequences, post-tests are used to assess his mastery of the behavioral objectives. This organization provides the teacher with a precise method for tracking each pupil and for specific instructional strategies for each objective. Both are important aids in managing an instructional program devoted to so complex a network of the interrelated behaviors.

The General-motor area is concerned with testing and, where indicated, teaching gross and fine motor skills. Included in this area are the very important finger manipulation abilities as well as the discrete control of the oculomotor and vocal systems. This acknowledges that, in effect, the child's general-motor actions, and especially his hands, "teach" his eyes the organizational skills required for the ordered manipulation of visual space -- and vice versa. In addition, it accepts the premise that the development of synchronized, bilaterally integrated body movements, combined with vocal operations, "teach" the ears the organizational skills required for the ordered manipulation of auditory space -- and vice versa. Thus, refinement of motor skills tends to support more discrete sensory processes.

The following are examples of the sequential ordering of behavioral objectives, as they are currently conceived, for the eight units of the General-motor curriculum area.

Insert Charts

General-Motor Units 1 thru 8

The Visual-motor area of the curriculum is concerned with the child's capacity to analyze, order and reproduce concrete visual information of increasing complexity. The child is not taught to reproduce specific forms. Rather, the objectives have been designed and presented in a manner that assures the teacher of the child's generalized ability to organize visual information with a diminishing dependency upon external support.

The objectives within the Auditory-motor area reflect these same concerns, as related to the analyses and organization of verbal and non-verbal information received by the ears. The skills probed include the child's ability to appreciate the presence of a specific sound embedded within contexts of increasing complexity. As is the case throughout the curriculum, the teacher is provided with teaching strategies for implementation when indicated by the child's responses to the tests.

The Integrative area, as is implied by the name, is concerned with the student's ability to relate intersensory information. For example, the ability to name as well as print the ltters of the alphabet is a concern of this area. A major terminal objective of the integrative area is to assess, and teach if so indicated, the pre-reading skills for the establishment of efficient phoneme-grapheme decoding skills.

The use of the IPI design is intended to provide the teacher with a means for individualizing her assessment and teaching efforts. Each child, in effect, will plot his own unique developmental profile which, in turn, will indicate the necessary intervention methods. In addition, it will increase the teacher's knowledge of the variations in perceptual styles among her students, thus assisting her in modification of her instructional methods.

We are currently conducting developmental testing of the curriculum in various schools. Data is being gathered and analyzed. Certain obvious changes in both program and management are already indicated. In addition, research concerning the effect of this instructional program on norm-referenced performance will continue through this academic year. The preliminary data is encouraging.

The goals of this effort are to eliminate the major sources of difficulty in current school directed perceptual programs and provide a developmental skills program that may be offered to each child before he is exposed to the abstract demands of higher order cognition. The successful application of an IPI model to a perceptual skills curriculum will provide for:

1. *Early skills assessment of <u>each</u> child.*
2. *An individualized instructional program that identifies the child's existing competencies and focuses upon those skills that are substandard.*
3. *A classroom management system that enables the teacher to assume the role for which she has been trained -- educator -- rather than imposing upon her the responsibilities of a clinician who must work in the most impossible of clinical conditions.*

BIBLIOGRAPHY

Bolvin, J. & Glaser, R. Developmental aspects of individually prescribed instruction. Audiovisual instruction, 1968, XIII.

Miller, G. A. The magical number seven, plus or minus two: Some limits on our capacity for processing information. Psychological review, 1956, 63, 81-97.

Resnick, L. B. Design of an early learning curriculum. Pittsburgh: Working Paper 16, Learning Research and Development Center, University of Pittsburgh, 1967.

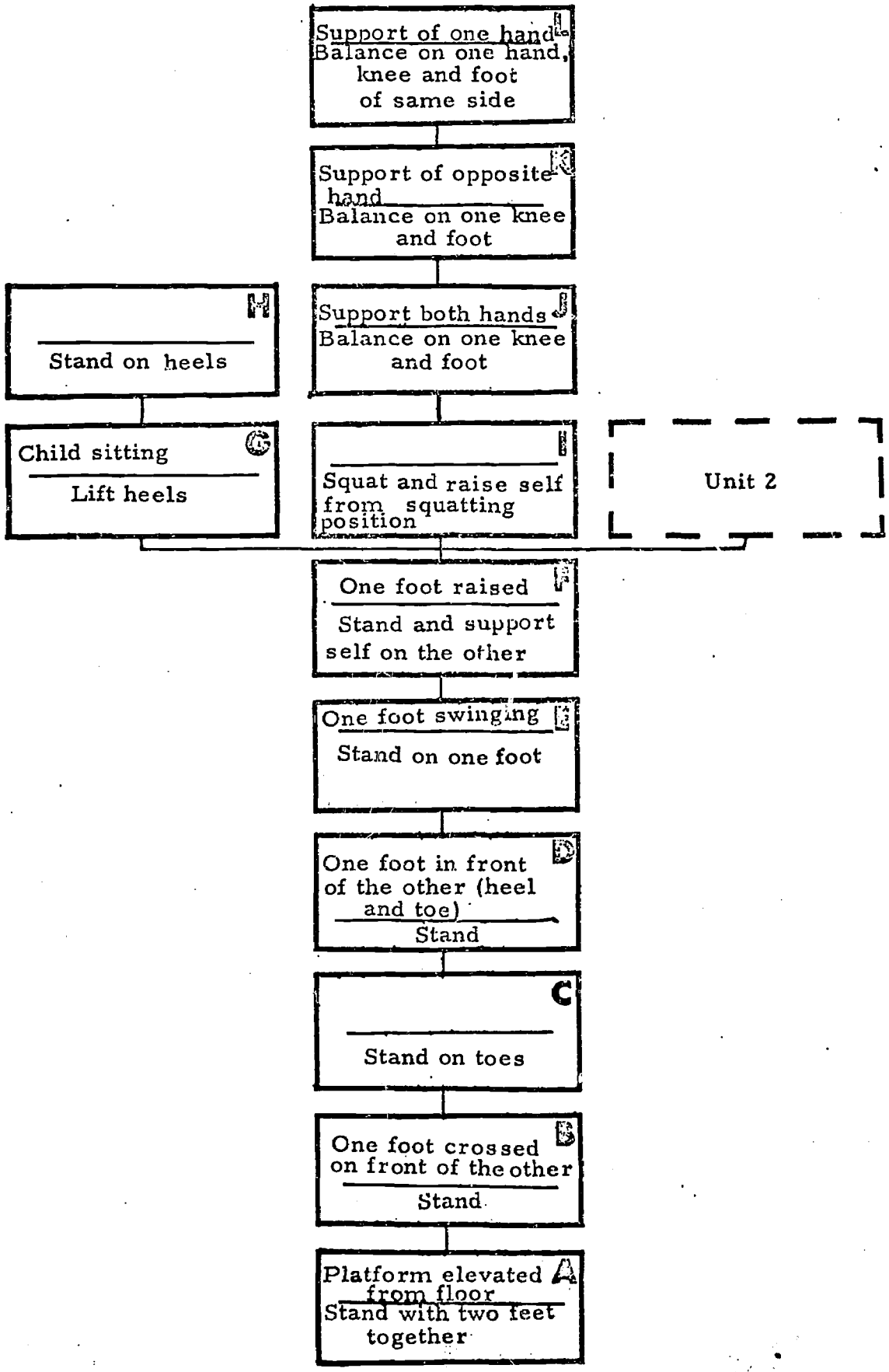
Rosner, J., Richman, V. & Scott, R. The identification of children with perceptual-motor dysfunction. Pittsburgh: Working Paper 47, Learning Research and Development Center, University of Pittsburgh, 1969.

Rosner, J. The design of an individualized perceptual skills curriculum. December, 1969. (In press)

Wang, M. The PEP testing program, Manual. Pittsburgh: Learning Research and Development Center, University of Pittsburgh, 1969.

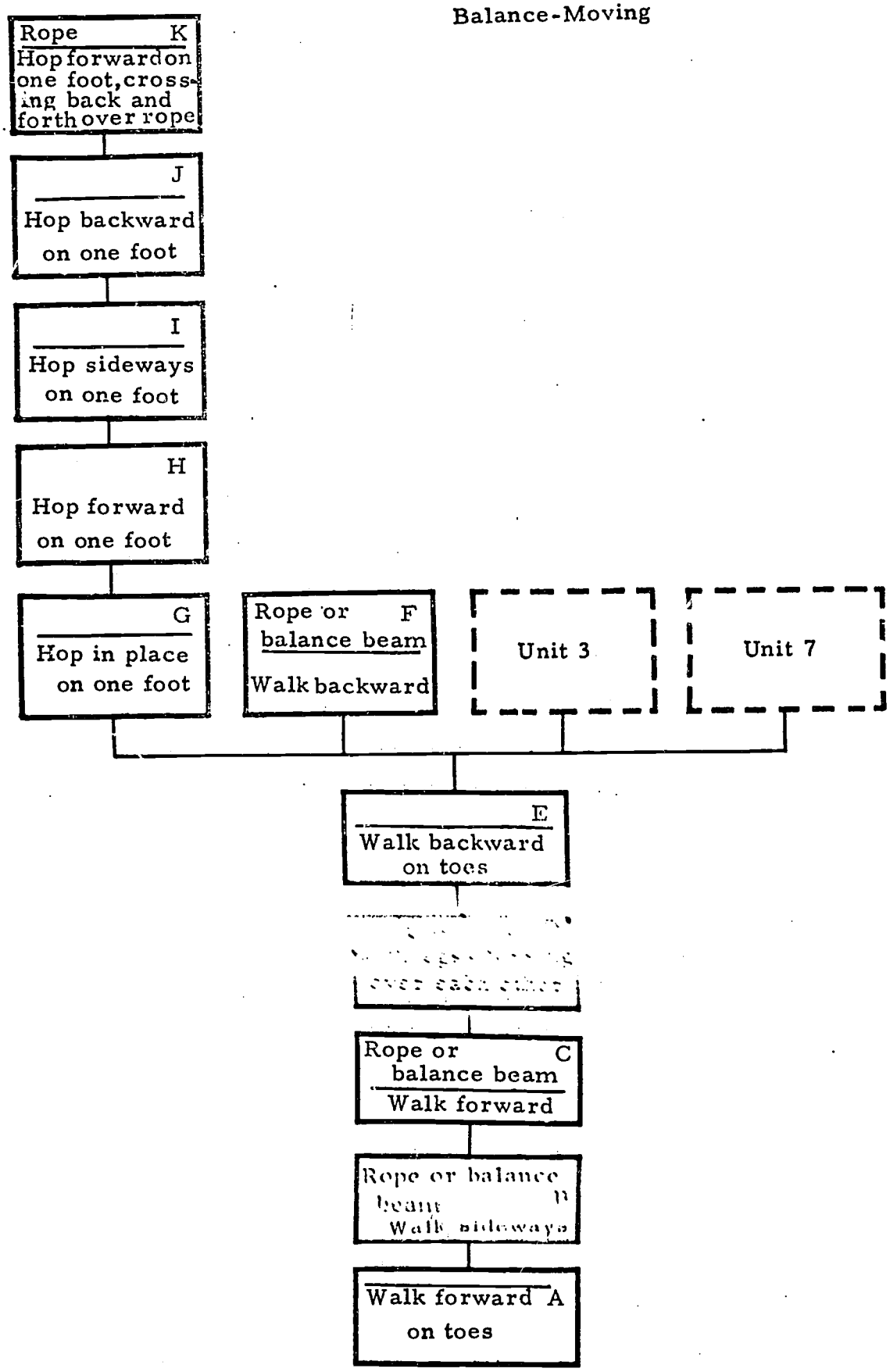
General Motor Unit 1

Balance-Stationary



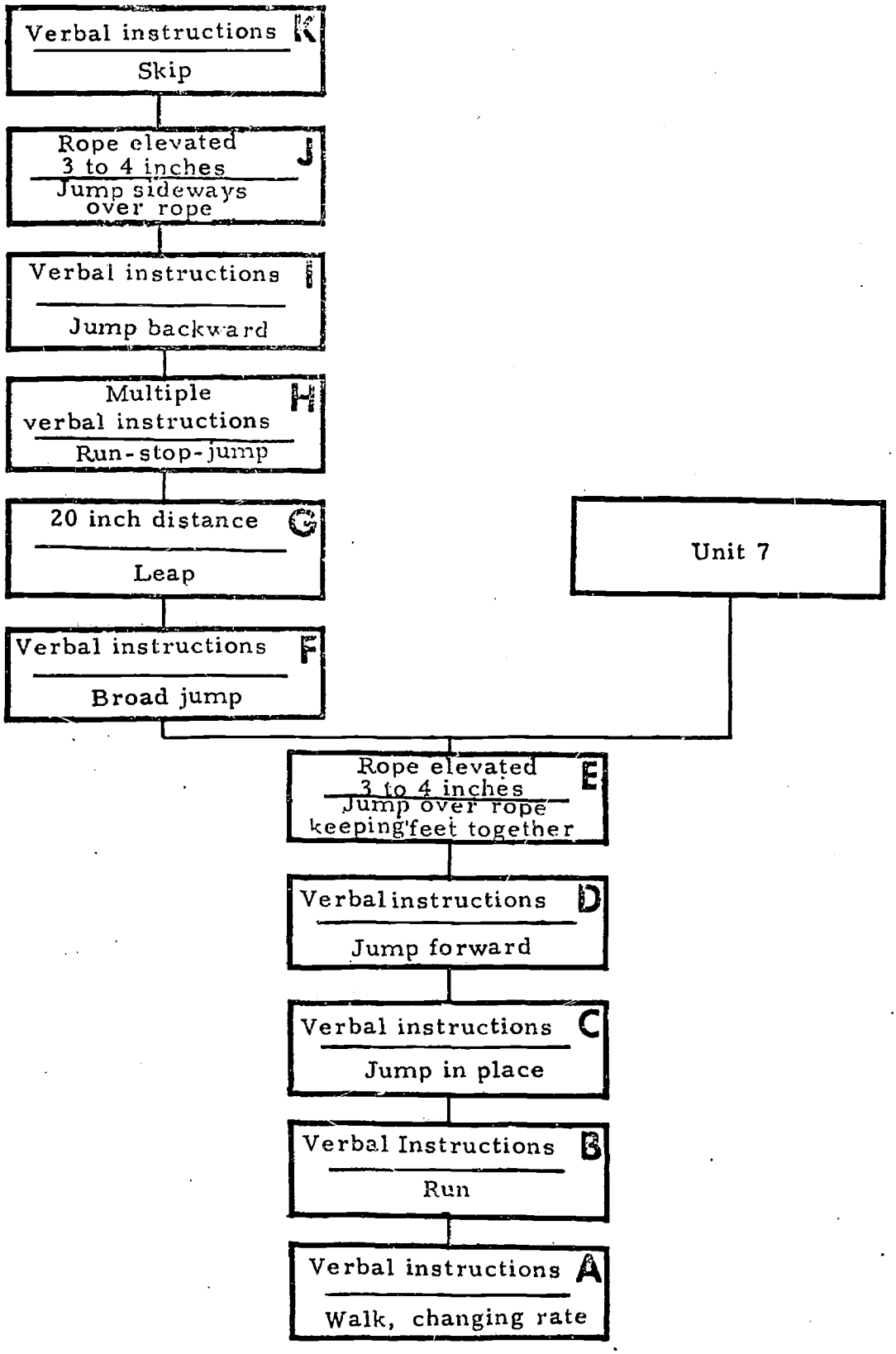
General Motor Unit 2

Balance-Moving



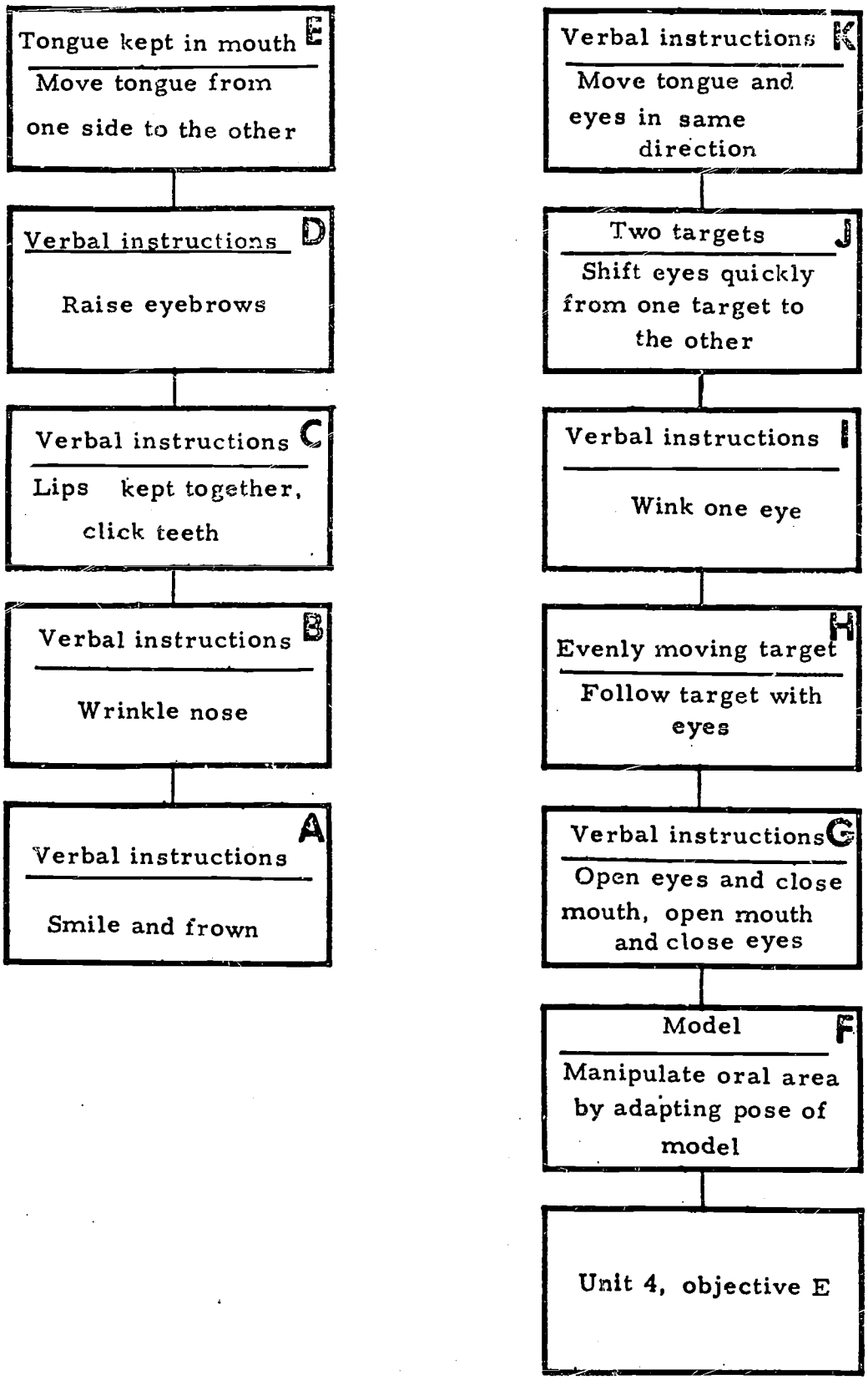
General Motor Skills Unit 3

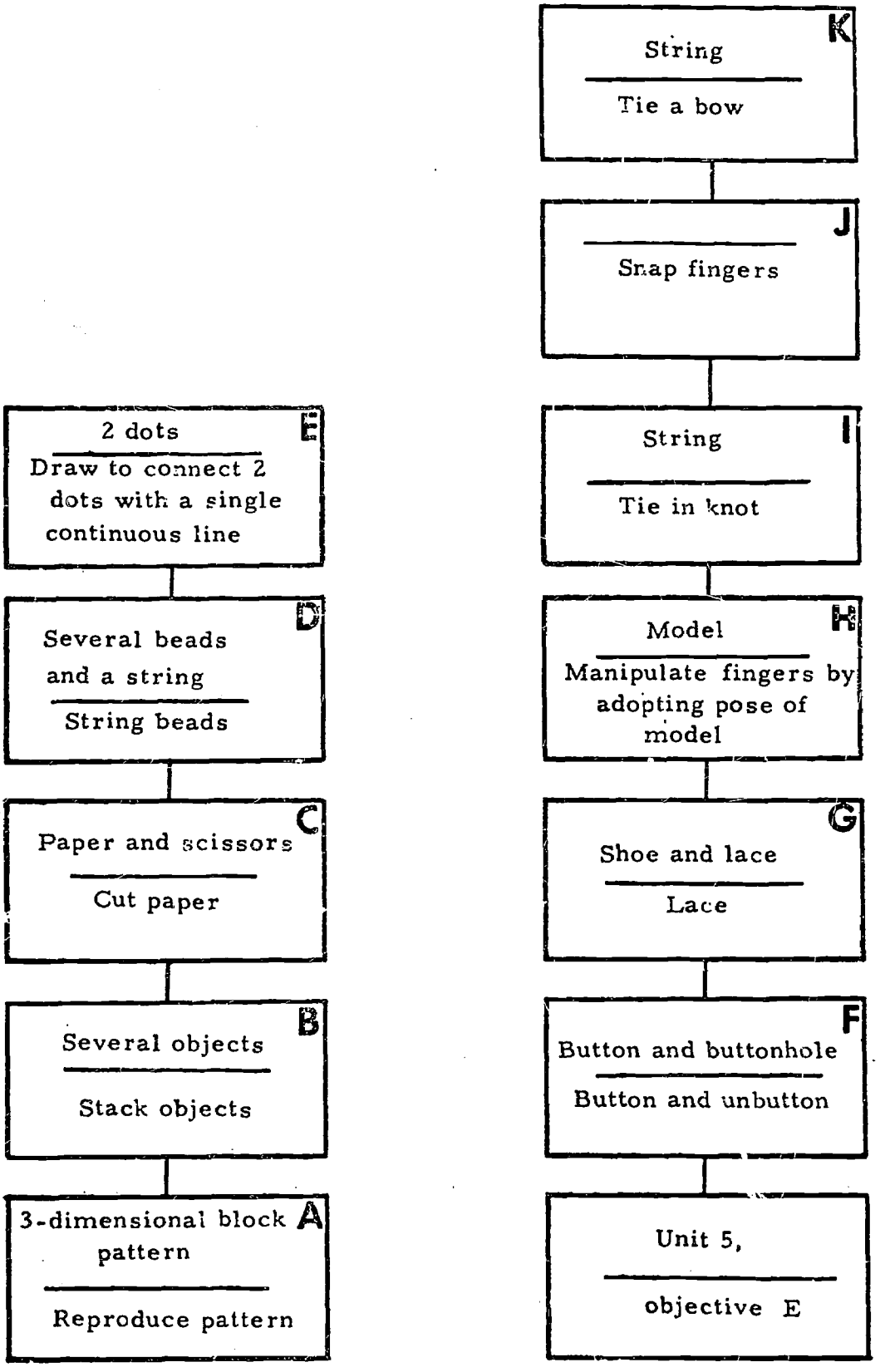
Combination of Gross Motor Processes



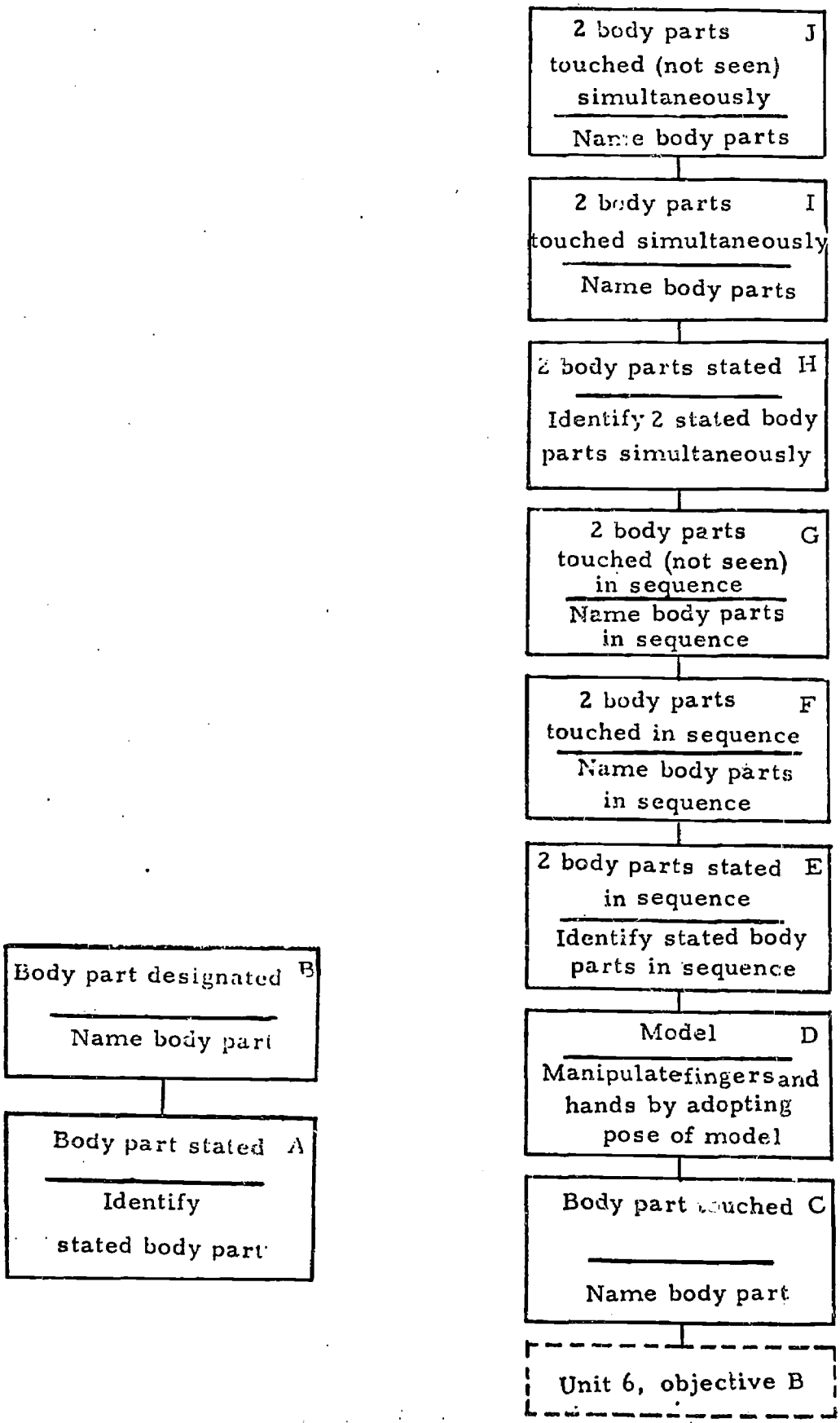
General Motor Unit 4

Fine Motor-Facial



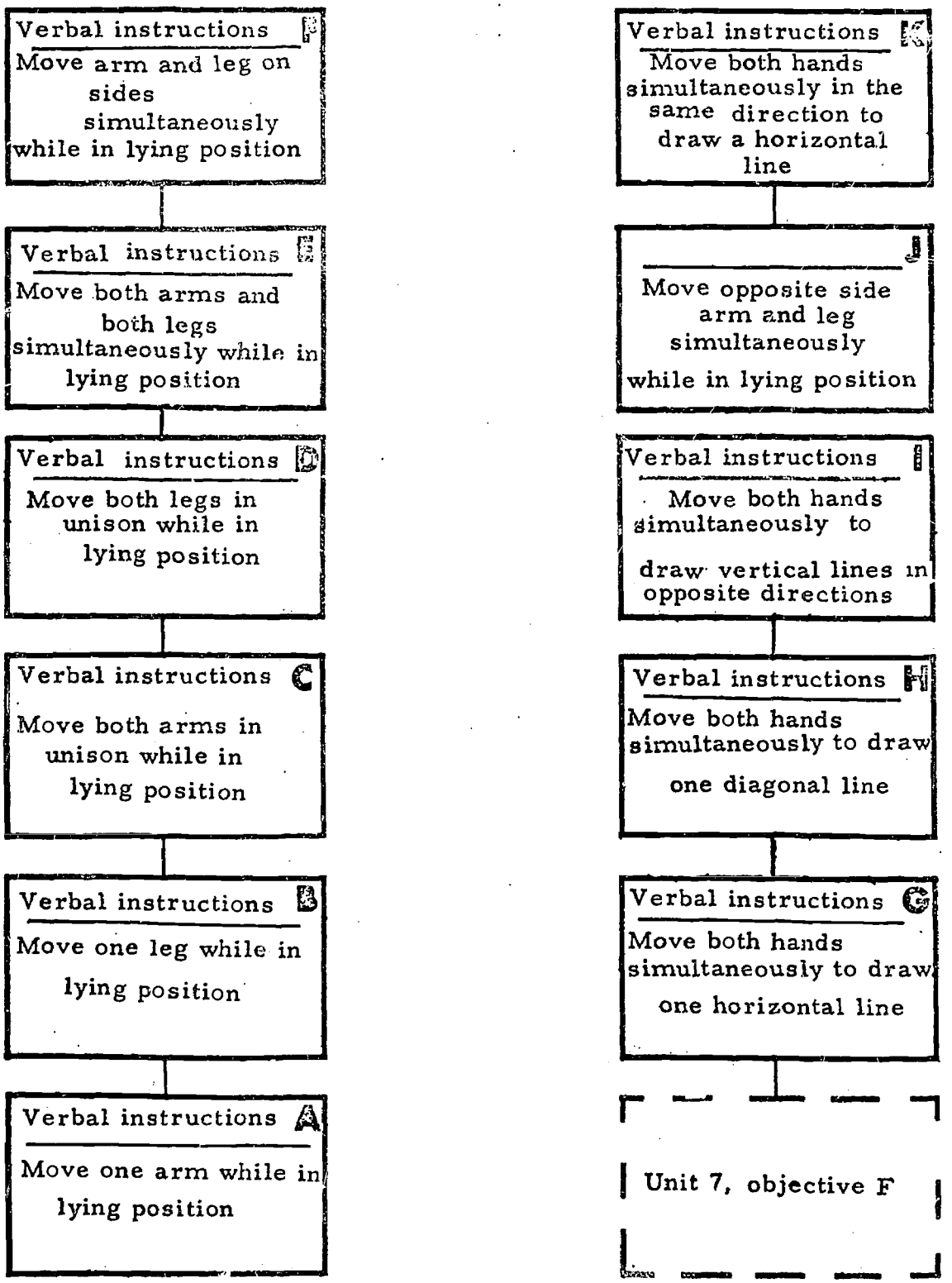

K
String
Tie a bow
J
Snap fingers
I
String
Tie in knot
H
Model
Manipulate fingers by adopting pose of model
G
Shoe and lace
Lace
F
Button and buttonhole
Button and unbutton
Unit 5,
objective E
E
2 dots
Draw to connect 2 dots with a single continuous line
D
Several beads and a string
String beads
C
Paper and scissors
Cut paper
B
Several objects
Stack objects
A
3-dimensional block pattern
Reproduce pattern

Body Awareness



General Motor Unit 7

Laterality



General Motor Skills Unit 8

Bilateral Integration